

Catalogue of American Amphibians and Reptiles.

ANDERSON, JAMES D. 1975. *Ambystoma ordinarium*.

Ambystoma ordinarium
Michoacan Stream Salamander

Ambystoma ordinaria Taylor, 1940:422. Type-locality, "four miles west of El Mirador near Puerto Hondo, Michoacán, México," elevation about 9000 ft. (2740 m). Collected 2 September 1938 by E. H. Taylor. Field Museum of Natural History 100055 (EHT-HMS 16367).

Ambystoma ordinarium: Smith and Taylor, 1948:13. Emendation.

- CONTENT. No subspecies have been described.

- DEFINITION. This is a moderately-sized species of *Ambystoma*; fully metamorphosed adults attain a maximum length of 86 mm snout to vent, neotenic larvae reach 100 mm SV. Metamorphosis occurs regularly although size at metamorphosis is variable (58–83 mm SV) and neoteny common. Transformed and neotenic animals of both sexes mature at about 70 mm SV.

Metamorphosed adults are usually uniformly dark grey-black to black above and uniformly dull grey-black below. In some individuals the dorsum is lightly mottled and others have three faint lines of light spots on each side of the body (dorsal, lateral and ventrolateral). Costal grooves are usually 12 but range from 10 to 13. The adpressed limbs overlap by at least two costal folds. Two palmar and two plantar tubercles are present but they are poorly defined in some individuals. The premaxillary-maxillary tooth number is less than 50 on each side, the mean total number is 79.5, range 61–97. The mean number of vomerine teeth is 56.1, range 41–71. The lingual plicae are nearly parallel and radiate slightly from the posterior part of the tongue.

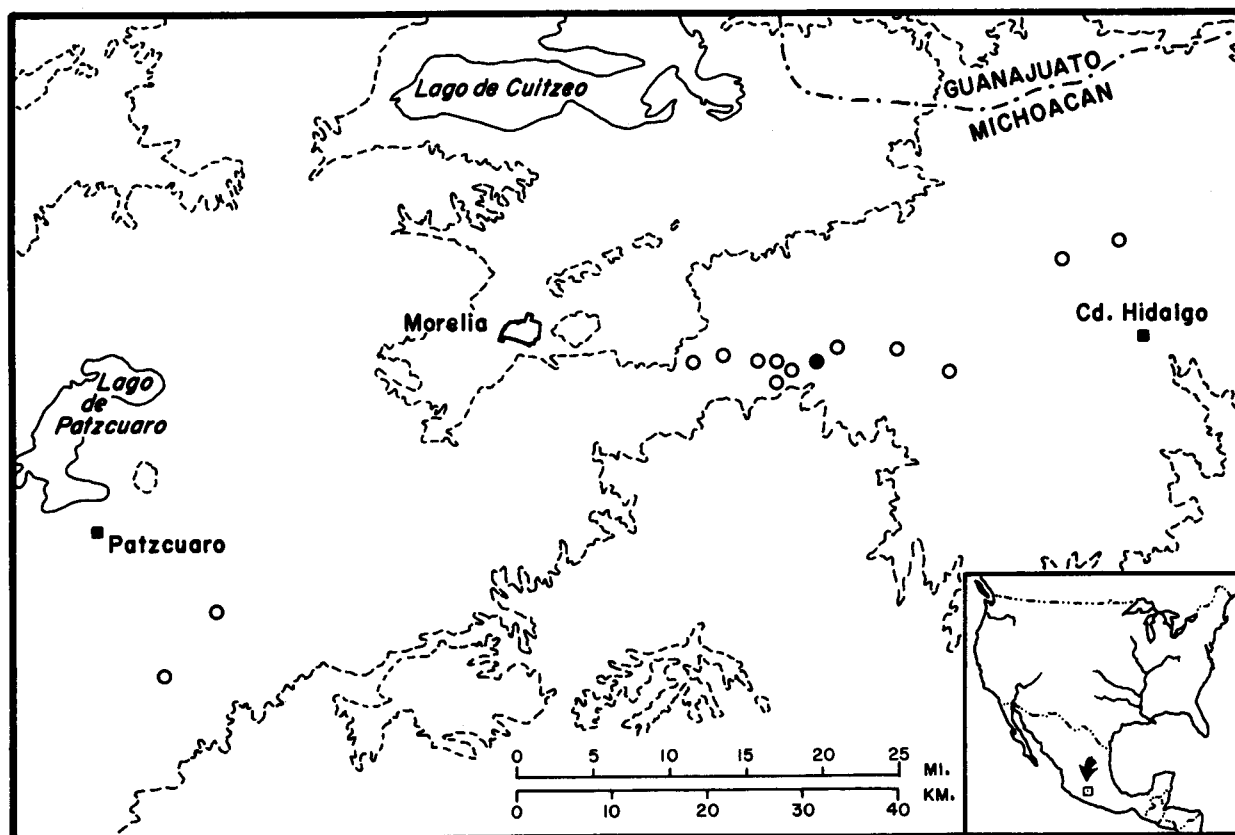
The larvae are intermediate between typical pond and mountain brook types. They lack a balancer, and the gills are

short and bushy. However, the dorsal and ventral fins are as fully developed as in pond-type larvae (Valentine and Dennis, 1964) at hatching but regress to the stream condition at about 30 mm SV. The mean length of hatchlings is 8.5 mm, range 7.9–9.2 (Harrison stages 38–40, Rugh, 1962). They are uniformly dark dorsally and pale ventrally with a ventrolateral row of silvery-white spots from axilla to groin. Larvae greater than 10 mm SV develop dorsal and lateral lines of small yellow spots in addition to the silvery line of spots ventrolaterally. Other ontogenetic changes include a general darkening of the dorsal surfaces, mottling of the dorsal fin and, later, a gradual darkening of the ventral surfaces. The typical larva is thus a dark animal with three pairs of linearly arranged light spots. Gill rakers on the anterior face of the third gill arch range from 8 to 12, mean 9.4. Costal grooves in larvae range from 10 to 13, mean 11.2. In immature larvae the mean total number of premaxillary-maxillary teeth is 36.2, range 33–40; the mean of vomerine series teeth is 61.1, range 55–66. The vomerine teeth frequently are in multiple rows whereas the premaxillary-maxillary teeth are arranged in a single row.

Neotenic larvae usually are colored like metamorphosed adults although many neotenes retain the linear arrangement of spots that characterizes smaller larvae. In sexually mature larvae the premaxillary-maxillary teeth average 47.6, range 40–57 and the vomerine teeth average 41.7, range 34–51.

- DESCRIPTIONS. The most detailed account of external morphology is the type description (Taylor, 1939). Tihen (1958) discussed skeletal features of related species and implied that some characteristics applied to *ordinarium*. Duellman (1961) treated variations in size, proportions, and color of larvae and adults. Anderson and Worthington (1971) described the eggs, ontogenetic changes in larval morphology, color, and color pattern.

- ILLUSTRATIONS. Taylor (1939) illustrated two larvae and a transformed adult female (the holotype). Duellman (1965) provided a photograph of the terrestrial habitat. Anderson and Worthington (1971) presented a photograph of freshly laid eggs from the natural habitat.



MAP. Solid circle marks the type-locality; open circles indicate other localities. Broken line is 2000 m contour.

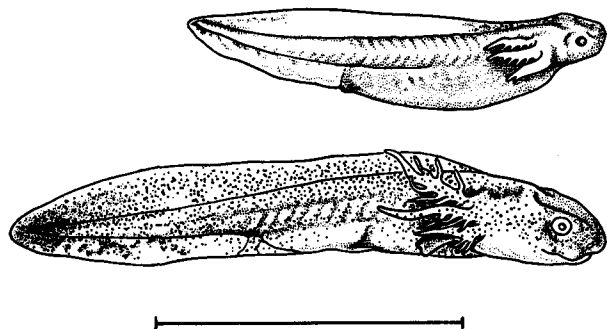


FIGURE. Young larvae of *Ambystoma ordinarium*; scale line indicates 1 cm.

• **DISTRIBUTION.** This species is found in or near mountain streams or spring pools in moist fir or mixed pine and fir forests above 2200 meters in the Cordillera Volcanica of Michoacan, Mexico. Locality records are summarized by Anderson and Worthington (1971).

• **FOSSIL RECORD.** None.

• **PERTINENT LITERATURE.** Taylor (1939) indicated relationship to *Ambystoma tigrinum* and Tihen (1958) placed *A. ordinarium* with members of the *tigrinum* species group of the subgenus *Ambystoma* on the basis of similarity in osteology. Duellman (1961) described the habitat and provided information on variation, food, and natural history. Neoteny in this species was discussed by Taylor (1939), Duellman (1961), and Anderson and Worthington (1971). Duellman (1965) mentioned some aspects of zoogeography and ecological distribution. Anderson and Worthington (1971) discussed breeding season, egg deposition, reproductive mode, life history, larval adaptations, and other aspects of ecology. Anderson (1972) and Marangio (1975) discussed the diurnal habits of larvae and aquatic adults with reference to the phototactic behavior of other species of *Ambystoma*. Smith and Taylor (1948) and Tihen (1969) included *ordinarium* in keys to Mexican species. Taylor and Smith (1945) remarked on the collection of additional topotypes.

The papers cited here and elsewhere in this account represent the scientifically pertinent literature on this species.

• **ETYMOLOGY.** The specific name *ordinarium* is from the Latin *ordinarius* meaning order. This is apparently in reference to the ordinary or regular color pattern of the species. The vernacular name is proposed here in reference to the geographical distribution and the habitat. No other stream dwelling salamander is known from the state of Michoacan.

COMMENT

The larvae are intermediate between pond and mountain brook types as characterized by Valentine and Dennis (1964), and intermediate between reproductive modes I and II as

defined by Salthe (1969). Anderson and Worthington (1971) postulate a relatively recent invasion of the stream habitat because of these intermediate traits and because of the lack or incomplete development of stream specializations. Since eggs were found in June and January, Anderson and Worthington (1971) also postulate an extended, perhaps year long breeding period in the rather uniform, although cool, montane habitat.

Neoteny is a common attribute of the species, and metamorphosed adults tend to remain in the streams for long periods. Thus, larvae of various sizes, neotenes and transformed animals frequently are found side by side in the narrow, shallow mountain streams, a population phenomenon unknown in other species of *Ambystoma*.

The courtship and spermatophore have not been described.

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